REFLECTIONS ON CREDIT MARKET INCENTIVES IN A SMALL OPEN ECONOMY WITH A DOMINATING MARKET PLAYER – THE CASE OF NORWEGIAN BANKING

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Abstract

This paper reflects on the banking market in Norway, a small open economy with a market player that is "too big- and too public to fail" (TBTPF). Discussing competition, risk and regulation, this paper reflects on market characteristics relevant for banking in other small open economies. Targeting the mortgage market, the dominant player contributes to credit-driven housing appreciations, which, when combined with floating mortgage rates, represents the main component in any financial stability assessment. The market share of foreign branches and subsidiaries, institutions not fully regulated by the Norwegian FSA, also contributes. The potential for a flight-home effect during a crisis might be the strongest risk contribution from foreign banking. In this respect the deviation from the single rulebook in Norwegian regulation is a paradox, as the risk shifting incentives created may contribute to a credit-crunch and be an ex post threat to financial stability.

Keywords: *Banking, Small Open Economy, Risk, Regulation and Financial Stability.*

INTRODUCTION

In a small open economy with capital mobility, the domestic banking sector responds to movements in the international financial markets. The competitive structure affects the banks' incentives to take risks. When a dominant, government-owned bank operates in the credit market with much smaller domestic banks and foreign branches and subsidiaries, all players are likely to take more risks. The dominant bank learns to regard itself as both "too big and too public to fail" (TBTPF).[i] The other actors believe that to be true and follow the moves of the leader, a type of herding which has negative consequences for financial stability.[ii]

A regulatory regime should alleviate the structural distortions of the credit industry related to capital mobility, increase strategic competition, and make prudent decisions regarding a dominant institution. Financial markets differ in their structure. Consequently, the decisions should be context specific.[iii] A case to the point is a dominant player's strategy to target a large share of the private housing market, characterized by standardised collateral, which gives the dominant bank a stable, low-cost source of funding but increases risks for financial instability.

The Norwegian banking system has a reputation of being both efficient and well capitalized. The main concern has been the central role that the housing and mortgage markets play in contributing to a higher risk level.[iv] In 2011, the Financial Supervisory Authority of Norway (FSA) tightened the guidelines for prudent residential mortgages, with a special emphasis of sufficient down payment.[v] Likewise, stricter (equity) capital requirements, over and above Basel III, may be part of a package against rising housing prices and increased household indebtedness (IMF, 2014).

In the domestic Norwegian market, the dominant player, DnB**,** competes with a large number of smaller savings banks, about 20 domestic and international commercial banks, and a few large subsidiaries of Nordic commercial banks.[vi] As an alternative to mergers, by even issuing share capital, savings banks have increasingly opened up for investors to complement their owner base, which originally only consisted of depositors and the home municipalities. In exchange, the investors have gained representation and power in the banks' general meetings and boards. The latter banks have become hybrids between savings banks and commercial banks. These banks' willingness to take higher risk is changing regardless of the market position of DnB. The foreign branches and subsidiaries contribute to increased capital mobility, but the movements of the capital are not as traceable to the regulators as the transactions of the domestic banks. The dominant bank, while competing with smaller banks in regional markets, acts as the counterpart to the same actors in money markets. At large, credit risk, market risk, funding risk and counterparty risk are highly intertwined.

Assessment of risk and the effect of incentives is a complex issue. Open economies, for example, differ from each other in terms of the level of financial restriction and the level of net external credit (Cho, 2017), which have an impact on decisions of market funding. In the domestic market, competition may, as empirically demonstrated by Leroy and Lucotte (2017), increase an individual bank's fragility but decrease systemic risk, thereby enhancing financial stability.[vii] Even if well-capitalized actors in banking economies should manage downturns better than under market intermediation, any recession in a banking economy is likely to be more severe and a recovery is likely to take longer (Gambacorta et al 2014). Market economies would simply react faster and more resolutely, letting poor banks go bankrupt and the rest of them move on.

The Norwegian credit market is a banking market. Ninety percent of the loans to personal borrowers are residential mortgages. Covered bonds account for a major share of the market funding. Financial stability is dependent on the house prices. This paper reflects on competition and risk taking of banks and regulation of banks in the Norwegian credit market. The aim is to highlight relevant characteristics of the market and discuss financial stability consequences and regulatory implications of these characteristics in a small open economy.

The structure of the rest of the paper is as follows. The second section is a brief overview of the Norwegian credit market, highlighting the role of the banks. The third section is on competition. The fourth section is a discussion on risks. In the fifth section, we elaborate on regulation. In all sections, implications for financial stability serve as background for the discussion. The sixth section concludes.

STRUCTURE AND RECENT DEVELOPMENTS IN NORWEGIAN BANKING

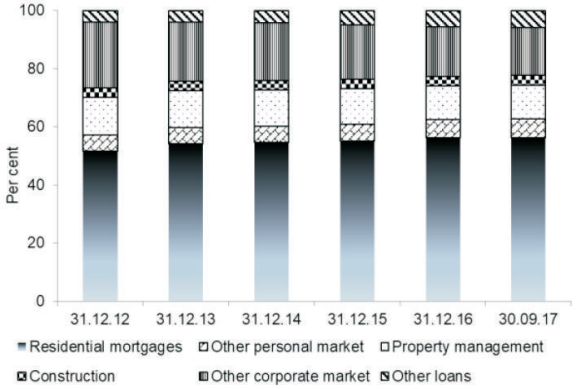
Savings reach investments either through banks or through financial markets. Any national financial system is a combination of the two channels of intermediation. An empirical analysis of forty-one economies by Gambacorta et al (2014) suggests the following regularities in the predominant intermediation channel. In general, the higher the GDP per capita, the more likely market intermediation is. Still, business sectors with tangible and transferable capital, as well as sectors where output can serve as collateral are more likely to rely on bank financing. By contrast, business sectors intensive with human capital and other sectors that do not easily lend themselves to collateralisation are likely to rely on equity or bond markets for financing their investments.

Even the size of the businesses in a country matters. The smaller the firms that seek financing, the more likely they are to rely on banks, simply due to the higher fixed cost of entering the capital market and possible loss of decision-making rights. Finally, the legal system, particularly the way of enforcement of contracts and property rights has an impact such that countries with common law systems (as opposed to French civil law) are more likely to rely on market-based financing as this protects the interests of equity and debt security holders.

Norway falls between a banking economy and a market intermediation economy. Admittedly, the GDP is high but firms are predominantly small and the prevailing industry structure is pushing the system towards bank domination. Furthermore, the private households invest almost solely in housing, which serve as collaterals for the banks.

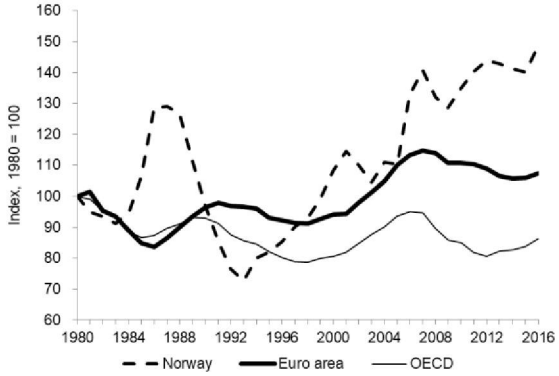
As we can see in Figure 1, in 2017, almost two thirds of loans to customers were to personal borrowers, almost in entirety (90 %) consisting of residential mortgages. There has been a strong growth in housing prices over two decades,

FIGURE 1: Loan portfolio, Norwegian banks



Source: Finanstilsynet (2017)

FIGURE 2: House prices per capita GDP



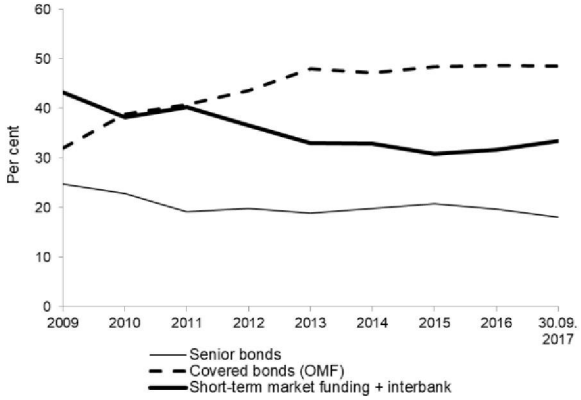
Source: Finanstilsynet (2017)

far stronger than household income (see Figure 2). The similarity of banks' lending portfolios and the high housing prices are major contributions to systemic vulnerability.

Norwegian banks are viewed as efficient, and well capitalised. Since the financial crisis of 2007, Norwegian banks have improved their financial positions.[viii] Still, institutions that analyze systemic risk are concerned about the possibility of risks building up (e.g. IMF, 2014). Deposit are the main source of funding for Norwegian banks, and the deposit share has been stable at forty percent for the last two decades. Even with low interest rates, the banks have been able to secure long-term funding thanks to a generous deposit guarantee scheme, covering deposits up to NOK 2 million.

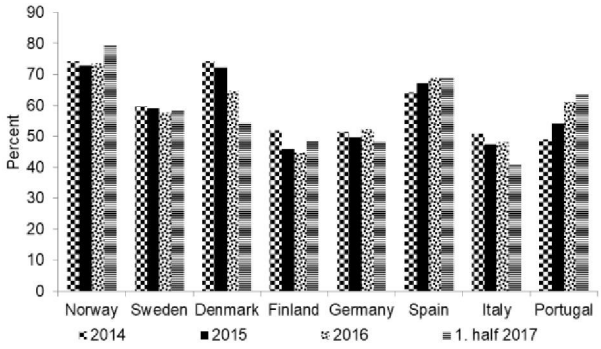
Covered bonds, which have become increasingly important in Norwegian market funding (see Figure 3), imply simultaneously both higher concentration and liquidity risk. Today, more than seventy percent of the market funding is with a

FIGURE 3: Composition of Market Funding



Source: Finanstilsynet (2017)

FIGURE 4: Net Interest Revenue, Share of Operating Expenses



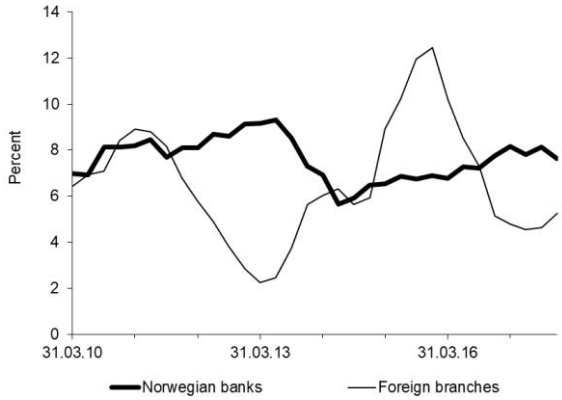
Source: Finanstilsynet (2017)

maturity of over one year, giving rise to considerable refinancing risk. The level of risk is dependent on the likelihood of future financial stress. The expansion of covered bonds links liquidity and funding at banks even closer to the housing market. In addition, banks cross-hold increasingly similar products in the same (housing) market, which implies higher systemic risk than historically.

In Norway, the banks still manage to make profits in the traditional way. Unlike in the neighboring countries, where net interest rates account for 48 to 59 percent of the banks' operating revenues, in Norway they account for as much as 80 percent (see Figure 4). Since the 1994 Agreement on the European Economic Area (EEA), foreign banks have been active in the Norwegian markets, operating through both subsidiaries and branch offices. The lending policy of the foreign

institutions is somewhat different from that of domestic institutions; targeting urban real estate and contributing to increased pro-cyclicality in the domestic credit growth (see Figure 5).

FIGURE 5: Lending Growth to Domestic Customers, Foreign Branches and Norwegian Banks



Source: Finanstilsynet (2017)

The structure of the credit market has implications for the financial stability in an economy. In ordinary downturns, well-capitalized relationship banks in a banking economy keep on lending and help their clients for a longer period than banks in a market economy. In a crisis, however, the banks may postpone necessary actions until they are out of means to help the customers. In sum, even if banks, in a banking economy, are likely to be better in smoothing recessions, they cannot easily deal with a severe blow of a collateralized debt market such as housing.

MARKET PLAYERS, COMPETITION AND MARKET CONCENTRATION

We find large variations in market concentration in Norwegian banking over the last decades. As many commercial banks became insolvent, and eventually nationalized, after the Norwegian banking crisis,[ix] concentration decreased in the beginning of the 1990s. During the mid-1990s, oil prices were high and economic growth strong, and concentration increased. The reduced number of savings banks has been a key factor throughout the period. In addition, the EEA agreement in 1994 opened in addition up the Norwegian market for foreign banks, and several Swedish and Danish banks increased their market shares quickly. The jumps in concentration are related to mergers.[x] After the financial crisis concentration decreased, partly due to a flight home effect from foreign banks, a tendency which is (somewhat) reversed in the most recent years.

At the end of 2017, there were 121 registered banks, subsidiaries excluded, registered in the Norwegian market. Over the past five years, the number of savings banks has decreased from 108 in 2013 to 99 in 2017 through mergers and acquisitions. At the same time, the number of commercial banks has increased from 16 to 22. The four largest banks accounted for 56 percent of total loans in 2013. In 2017 the C4, after Nordea, Danske Bank and Handelsbanken had become merely subsidiaries in Norway, was at 51 percent. Over the same years, Herfindahl-Hirschman Index (HHI) has decreased from 0,177 in 2013 to 0,137 in 2017.[xi]

The HHI indicates a scattered market with many banks, less concentrated than other Nordic banking markets. Yet, most of the numerous local savings banks do not compete with each other or against the international banks, international subsidiaries of commercial banks, or niche commercial banks, even if digitalization makes it possible to expand their customer bases beyond the local physical market. Should one take into consideration that most of the savings banks belong to one of the two alliances, Sparebanken 1 or Eika, and instead include the alliances rather than the individual banks in the concentration index, the already high concentration would be even more distinct (Myrna and Prydz, 2014).

The largest bank, DnB, accounted in 2013 and 2014 for 40 percent of total loans. In 2016 and 2017 its share has, according to annual bank statistics (fno.no), been at 35 percent. The next largest shares have been at 6 to 7 percent, 5 to 6 percent, and 4 to 5 percent respectively. In other words, concentration is high, and it is the shares of the second through the fourth largest banks, all foreign banks, that are increasing.

An analysis of competition and market behavior in the Norwegian banking market by Menon (2018) draws attention to the pro-cyclicality of the foreign branch lending and the counter-cyclicality of savings bank lending (see Figure 5). Targeting commercial real estate and mortgage lending in urban areas, foreign branches aim for the most profitable market segments where both credit screening and collateral is standardized, contributing to the business cycle.

In an analysis of the effect of regulation on the Norwegian mortgage markets, Høyheim (2014) focuses on asymmetric shocks. In a setting of three types of players, systemically important banks, foreign banks and small(er) savings banks, the author argues for a price-leader structure with higher prices than in a traditional Bertrand competition, where the followers would passively respond to any price increase by the leader. An asymmetric shock to the leader's cost impacts positively on the relative price of the leader. While the profit effect on different market players depends on the size of the cost increase, there is a reduction in the leader's market share irrespective of whether the profit effect is positive or negative. Høyheim (2014) relates observed deviations from the model

prediction to switching costs, product differentiation and the underlying assumption of a national, instead of a regional, mortgage market.

Since the financial crisis and the interest rate reductions that followed, debt levels have increased in most part of the western hemisphere, including Norway. As shown in Figure 2, the ratio of house prices to GDP per capita has increased substantially in Norway. The systemic risk impact of a credit driven collateral appreciation is obvious. A tradition for floating mortgage rates contributes, as about 90 percent of mortgages are with floating mortgage rates. Higher exposure towards a market where prices have been argued to be out of line with fundamentals for a substantial period may be seen in relation to TBTPF. Most banks have targeted mortgage markets, and seen high growth rates in mortgage lending. In fact, market participants that do not follow the behavior of the TBTPF-institution expose themselves to the risk of foregone market shares and profits, like a traditional prisoner's dilemma situation. The changes in savings' banks governance structure, where investors are represented in boards, might contribute to more profit-oriented savings banks, stimulating herding both in lending, and when in covered bond funding. Haldane and May (2011) warned about the dangers of every bank doing the same, increasing the probability of a systemic collapse. High exposure to the risks of out-of-line house prices also contributes.

There is cross-country variation in credit ratios within the group of advanced economies. Lane and McQuade (2014) establish empirically for thirty European advanced economies, including Norway, that credit growth in the years 2003 to 2008 was most intense among countries that started with high credit-GDP ratios. More specifically, credit growth was faster in countries with liberal regulations and higher rates of home ownership. Overall, the results suggest that the openness of an economy is a significant driver of domestic credit fluctuations and that it is important to distinguish between net debt and net equity flows, and not only current account imbalances. Being a small open economy with a banking market where the foreign market share is among the highest in Europe, the changing funding structure argument is highly relevant for Norway. High rates of home ownership also contribute to strong credit growth as standardised collateral provides funding opportunities alongside short-term foreign funding.

RISK STRUCTURES, RISK TAKING AND FINANCIAL STABILITY IMPLICATIONS

Competition is claimed to increase efficiency and innovative creativity on the micro level but does it contribute to financial stability on the macro level? Economists disagree on the consequences of competition on financial stability. Empirical results on the association between competition and bank risk are also mixed (e.g. Claessens, 2009).

The competition-fragility argument relates high level of competition to financial instability. The argument originates from the franchise-value paradigm of Keeley (1990). A number of papers (e.g. Allen and Gale (2004), Beck et al (2006) and Boyd and DeNicolo (2005)) support the stand according to which fierce competition erodes banks' market power and profits giving an impetus for the banks to take more risk in order to earn the desired return, causing instability at the macro level.

Why, instead, a few large banks should increase stability is due to them supposedly benefiting from economies of scale and being able to construct more diversified portfolios. The banks may even become more acquainted with their stable customers, thus contributing to higher information rents and lower levels of moral hazard and adverse selection. This competition-stability argument relates low level of competition to financial stability. Still, Boyd and DeNicolo (2005), for example, argue that even if low competition and higher charged interest rates increase the franchise value of the banks, the borrowers from the few large actors incur reduced franchise values and increased risks. In other words, there would be no risk reduction on the system level, merely a risk-shifting effect from the banks to their borrowers. In short, when competition is fierce, the banks lower their interest rates for loans. The moral hazard and adverse selection problems decrease, which reduces the banks' risk for default and therefore enhances financial stability. Martinez-Mierza and Repullo (2010), who incorporate a margin-effect that might counteract the risk-shifting effect, modify the argument. The authors suggest that the relationship between competition and financial stability be non-linear or inverted U-shaped allowing the two main arguments to coexist. High power in loan markets with little competition induces the major actors to charge higher loan interest rates, which has two effects. On the one hand, the borrowers may fault increasing the likelihood of insolvency at the bank. On the other hand, the profitability of the bank increases thanks to the high loan rates. During a crisis the behaviour of banks does not necessarily follow the same logic, and the relationship between competition and financial stability might weaken as banks increase risk-taking to benefit from any safety-net subsidies or increased risk-aversion to lower moral hazard (Cook, 2008).

In Norway, Heimdal and Solberg (2015) have found that the relationship between concentration and a bank's loan risk (the rate of non-performing loans) might be U-shaped. For low levels of concentration, increased concentration reduces non-performing loan rates. Past a certain level of concentration, this relationship is reversed. The authors suggest that Norwegian banking a few years ago was close to the optimal level such that an increase of concentration (reduction in competition) would lead to a higher non-performing loan rate.

The literature on systemic risk may be divided into three parts: systemic risk-taking (why), contagion mechanisms (spillover from one part of the system to

another), and amplification mechanisms (small shocks make large impacts). Systemic risk-taking where financial institutions invest in the same assets and are exposed to the same risks is particularly relevant in the presence of herding and where there are benefit from bailouts (or low interest rates). Contagion mechanisms may take many forms, be it interlinkages in money markets, or where any consequences of risk-taking spread from one part of the financial system to another. Any financial, or informational, interlinkages in terms of network, alliances, private bailouts or central counterparties might increase the risk of a potential financial crisis spreading from one continent, economic area, country or region to another. A closer look into amplifying mechanisms is particularly relevant in settings with mortgage lending, use of housing as collateral for debt and covered bond funding. Contagion and spillover mechanisms are no less relevant in a leader-follower situation, where most of the domestic followers belong to one of two alliances. In addition to the credit multiplier (the amplifying mechanism), overinvestments and herding are likely to occur. Following the TBTPF, the other banks would overinvest in housing, believing the TBTPF to survive in any case, and benefiting from any safety-net subsidies. The reduction in the number of savings banks has taken place through mergers. Weiss et al (2014) have found a significant increase in the merging banks' and combined banks' contribution to systemic risk after the mergers. The effect, according to Weiss et al (2014) is not limited to the largest banks, but is actually particularly strong among smaller banks that may believe that herding will provide them a bailout guarantee.

In Norway, the interlinkages between the largest Nordic banks and between the largest Nordic banks and their respective subsidiaries and branches are in the core of any contagion. Both Swedish and Danish large banks operate in several countries. There is reason to expect that in case of a shock the banks would look after their own bank group's interest rather than the interest of the host country of the group member. The foreign banks would thus contribute to both liquidity risk and systemic risk in Norway. Any losses from liquidation of longer-term assets would be a gradual process where the banks further behind in the liquidation process would suffer the most in a banking economy, such as Norway. The rule of thumb that Norwegian banks do not go bankrupt, but are incorporated into another bank may also increase systemic risk.

Within the country, Norwegian savings banks have close links to DnB and each other. They observe and interpret each other's moves in setting interest rates, in diversifying their portfolios and when choosing funding. Large cross-holdings of deposits reallocate liquidity, but do not increase it. If demand should exceed supply of liquidity, the domestic market would be at risk due to the incomplete interbank network consisting mainly of a small number of domestic and European regions. Any losses from liquidation of longer-term assets in case of a crisis would result in a gradual process where the institutions later in the liquidation process would suffer bigger losses. This is a negative consequence of

a banking dominated economy, compared to a market economy. A banking economy fares well in good times and moderate recessions. In a crisis, by contrast, a market economy recovers faster.

In connection with effects of foreign interest rate hike shocks Cho (2017) has shown that small open economies are not homogenous. Differences in net external credit level and level of financial restriction result in different macroeconomic responses. If external debt is high, investment at home suffers due to interest payments on foreign debt. Cho establishes four types of small open economies based on the level of financial restriction and the level of net external credit vs. debt: high restriction – net external credit, high restriction – net external debt, low restriction – net external credit and low restriction – net external debt (Cho 2017, p. 103). Norway is in the period from 1st quarter 1995 to 4th quarter 2010 categorized in the same group as Switzerland, Israel and Bolivia, with low restrictions and net external credit (see Cho 2017, p. 120). The empirical results show differences in the effects of foreign interest rate hikes. Low financial restriction seems to give heightened domestic interest rates when foreign rates increase, materialising the risks inherent in high debt and floating mortgage rates immediately (Cho 2017, p. 126).

REGULATION AND FINANCIAL STABILITY

There is a mainstream understanding of the need to regulate banks due to market failures and the costs to society following financial crises (e.g. Goodhart et al (1998), Brunnemeier et al (2009) or Taylor et al (2009)). Regulation is beneficial when market outcomes are socially inefficient and regulation can improve inefficiencies in a way that outweighs the costs of regulation (e.g. Ulltveit Moe et al (2013). Inefficiencies might be due to market power, externalities or information asymmetries, and regulation might be reasoned from a consumer protection motive, or to secure the provision of goods and services.[xii] Regulation includes both on-site and off-site supervision, and is traditionally focused on microprudential measures.[xiii]

In the aftermath of the last financial crisis, a macroprudential approach to regulation has emerged. Macroprudential regulation is concerned with systemic risk, and the rationale is market failure (DeNicolo et al, 2014).[xiv] Borchgrevink et al (2014) identifies six categories of market failure that give raise to macroprudential concerns, pecuniary externalities, interconnectedness externalities, strategic complementarities, aggregate demand externalities, the lemons problems and deviations from full rationality. The policy recommendations vary from *ex post* policies (bailouts) to *ex ante* policies (a LTV-constraint), and time varying measures that internalize the cost of deleveraging to avoid excessive borrowing.[xv]

A few features of the otherwise traditional Norwegian regulatory measures are worth noticing, the intensity and structure of the measures. The Norwegian deposit insurance scheme is generous.[xvi] Still, Ulltveit-Moe et al (2013) argue that the higher fee Swedish and Danish banks pay for membership in their guarantee scheme cancels out the favorable deposit effect when thinking in terms of how regulation impact bank competitiveness. In terms of capital, Norwegian banks are exposed to higher requirements, mainly due to the transitional floor (Ulltveit-Moe, 2013, p. 58). When implementing the Basel-framework Norway adapted the interpretation of the Basel committee, while the neighbouring countries followed the EU interpretation.

Internationalization pushes regulators to level the playing field, and capital regulations are harmonized through the Basel-framework.[xvii] Imposing higher capital requirements invalidate the concept of a levelled playing field. Still, Ulltveit-Moe et al (2013) argue against a leveled playing-field. As a theoretical argument, they use differences in externalities between countries. When externalities are local, the home country would benefit from country-specific regulations. Several characteristics push both for strict regulation, on one hand, and for a recognition of a unique Norwegian playing field, on the other hand. The oil dependence, the link between several systemic risk components and the housing market - combined with the tradition for floating mortgage rates -, TBTPF and extensive short term foreign funding are all arguments for strict(er) regulation. This calls both for a systemic risk buffer and for higher capital requirements under Pillar 2 for banks exposed to the oil industry. In addition, as the housing market carries the ballpark of systemic risk, there is an argument for higher mortgage risk weights for banks operating in Norway.[xviii]

In terms of macroprudential regulation, several aspects discussed earlier are relevant. A lending driven house price appreciation lifting house prices far out of line with fundamentals may be argued in relation to TBTPF. During the same period, one has both seen a number of mortgage market innovations and what seem to be shifts in banks' risk assessments from debt-servicing ability to collateral.[xix] As a response the FSA introduced new macroprudential tools impacting lending, by constraining LTV-ratios and the use of interest only mortgages. Excessive credit expansion is one of the main drivers of financial crisis (e.g. Reinhardt and Rogoff (2008)), and an important reason behind the Norwegian banking crisis during the late 1980s (Knudsen and Lie (2002). This kind of over borrowing is related to pecuniary externalities.[xx] The intensive use of short-term foreign funding and the maturity mismatch this represents is another pecuniary externality relevant in Norwegian banking.

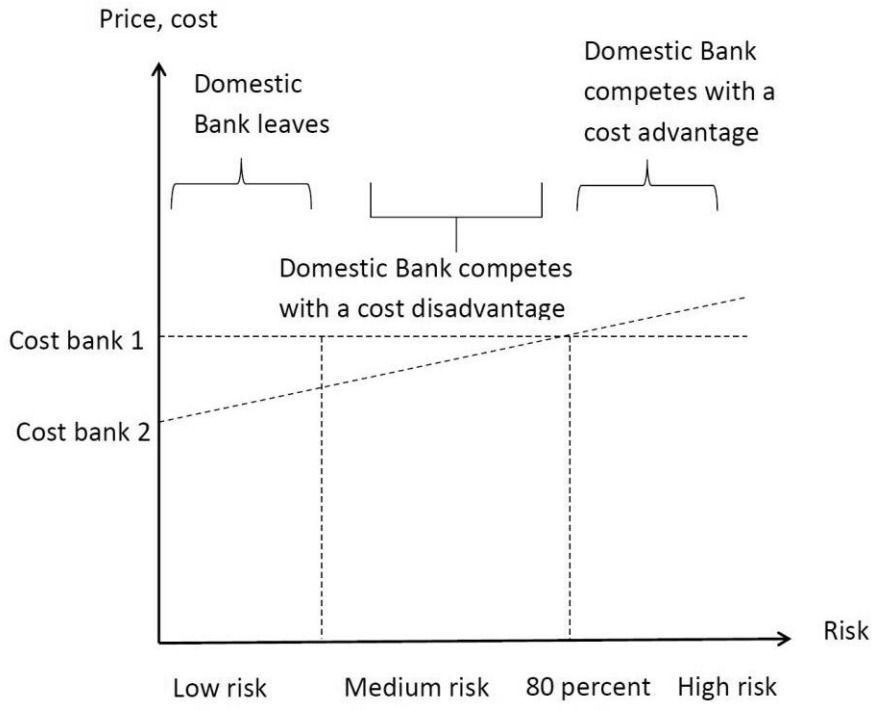
Large and (more) complex banks may themselves be a potential threat to systemic stability. Empirically, they may be argued to have lower capital ratios, less stable (short-term) funding, more trading and higher exposure to potentially risky market-based activities (Laeven et al (2016)). When, in addition, a bank is

TBTPF, bankruptcy is even less likely, and risk taking even higher. Haldane and May (2011) argue that from a system-wide perspective, regulatory requirements should be set higher for those banks who bring greatest risk to the system, due to, for example, their size or connectivity.

However, for regulators it remains to deal properly with foreign institutions. Høyheim (2014) shows how the implementation of CRR/CRD IV favors foreign branches and subsidiaries and the small(er) banks at the expense of the systemically important institutions. Evertsen et al (2016) discuss the effects of asymmetric capital requirements across domestic and foreign banks. Figure 6 pictures the reasoning on market adaption of two banks, bank 1 (a domestic bank) and bank 2 (a foreign branch), which is along the lines of the reasoning by Evertsen et al (2016). There are three risk levels, low, medium and high risk and two costs of different regulatory regimes (Cost 1 and Cost 2, respectively). Assume that before the country-specific capital requirement both banks face Cost 2. The asymmetric capital requirement shifts the cost domestic banks up (to Cost 1), resulting in a cost disadvantage in the low and medium risk segments, and a cost advantage in the high risk segment, for domestic banks.

Consequently, the asymmetric capital requirements encourage domestic banks to expand in the high risk segment and contract in the lower risk segments.

FIGURE 6: Risk Categories and Costs to Domestic (Bank 1) and Foreign Banks (Bank 2)



Conversely, one would expect that foreign banks increase margins and market shares in the lower risk segments due to cost differences. Higher margins are negative for borrowers. As domestic banks reduce lending and foreign banks increase lending the effect on aggregate lending is uncertain. A main argument for implementing stricter capital regulations in Norway was to curb lending and reduce the risk of a housing bubble.[xxi] The reasoning above questions this argument and raises the question of whether the asymmetric capital requirement might have negative implications for financial stability. The theoretical reasoning mirrors the development sketched earlier, where foreign banks drive domestic credit growth.[xxii]

As domestic banks reduce lending in low risk segments and increase lending in high risk segments, their lending portfolios might contain higher risk. In the past, foreign banks have been shown to withdraw easily from their markets abroad (see Gianetti and Larsen (2012)). The possibility for a flight-home effect makes any focal market with strong foreign actors less stable. If the asymmetric capital requirements make foreign institutions expand and domestic institutions contract in low risk segments, the credit crunch might be stronger in the low risk segments. Ulltveit Moe et al (2013) question the assumption of borrowers switching en masse to cheaper Swedish banks, because of switching cost and limited lending capacity.

CONCLUSION AND DISCUSSION

This paper reflects on the structure of the Norwegian Banking market with the aim of pinpointing features relevant for banking markets in other small open economies. The Norwegian banking market is regarded as efficient and well capitalized. Market concentration is high, and the TBTPF institution competes with two alliances of savings banks as well as foreign branches and subsidiaries. Norwegian banking is rather "old-fashioned" and the net-interest rate's share of operating revenues is high. Linking credit, funding, liquidity and concentration risk to the housing market and the lending policy of the TBTPF institution, we see a strong link from TBTPF to systemic risk. Floating mortgage rates contribute to placing the ballpark of systemic risk on the shoulders of the Norwegian housing market. The market position of DnB makes the regulatory argument of Haldane and May (2011) relevant from the financial stability perspective for banking and calls for a playing field not levelled according to popular arguments.

Increased use of covered bonds is only one risk component associated with funding. The extensive use of foreign short-term maturity borrowing makes Cho's (2017) argument relevant. The market position of foreign branches and subsidiaries raises the question of whether foreign banks consolidate at the aggregate, or the country level and the relation between home and host country. This is particularly relevant during a crisis, as a flight-home effect might create a

credit crunch. A regulatory measure that does not include foreign branches represents an asymmetric shock to banking, which affects competition, but might also have negative impacts on financial stability. As deviations from the single rulebook give foreign institutions a cost advantage in low risk segments and domestic institutions a cost advantage in high risk segments, the country-specific capital requirements might increase portfolio risk in domestic banks. If switching costs are low, and customers are not loyal, this might create a substantial credit-crunch in low-risk segments, and a stronger credit crunch at the aggregate.

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[i] TBTPF is an extension to the too big to fail (TBTF) argument where a systemically important institution is owned by the government. TBTF-institutions enjoy implicit government guarantees, which reduce the cost of capital. The lower financing costs create incentives to take on more risk or grow beyond their optimal scale (Dam and Koetter (2012) or Duchin and Sosyura (2014)).

[ii] See Spyrou (2013) for herding in financial markets.

[iii] See Allen and Gale (2004) for financial systems and Acharya (2009) for levelled playing fields.

[iv] OECD (2018) presents housing and household debt as dominant risks in the Norwegian economy.

[v] The FSA introduced in 2011 a 15 percent down-payment requirement on residential mortgages. In 2014, the Ministry of Finance stated it as a guideline, and not a rule. Since then rules for mortgage lending have been introduced, and tightened, including both restrictions on interest only mortgages and introducing regional differences, tightening lending conditions in Oslo (in particular). For the restrictions on mortgage lending and the macroeconomic context see https://www.finanstilsynet.no/en/publications/risk-outlook-reports/#22550

[vi] See Knudsen and Lie (2002) for the Norwegian banking crisis, the bankruptcy of the Norwegian commercial banks, and the process leading up to the establishment of DnB (Den norske Bank),

[vii] See Schinasi (2004) for a definition of financial stability.

[viii] To describe Norwegian banking we have used the November 2017 and the June 2018 Risk Outlook of Finanstilsynet (The Norwegian Financial Regulator) and March 2017 Monetary Policy Report of Norges Bank.

[ix] See again Knudsen and Lie (2002).

[x] A merger between the DnB and Gjensidige NOR in 2003 lifted concentration, as did the 1994 merger between Postbanken and Sparebanken NOR, which became DnB.

[xi] The numbers are author's own calculations using the source fno.no.

[xii] There are alternative views both regarding the form of regulation and regulation as such. Allen and Gale (2007, p. 190) summarize the financial regulation since the Great Depression as a process of trial and error consisting of segregation of commercial and investment banking and a provision of deposit insurance to banks and savings and loan institutions. The authors criticize the underlying assumption that the financial system is fragile and that regulation therefore has to prevent financial crisis at all costs. Furthermore, they point out that the measures taken are not based on theory and that the regulatory procedure continues to be political decisions based on previous empirical measures making the regulatory regime path-dependant. Allen and Gale (2007) argue the proper economic way to regulate would be to identify the source of market failure and identify an appropriate remedy to it. Allen and Gale (ibid. 191-) look at potential benefits of regulating either capital adequacy, the minimum level of capital that a bank should maintain in relation to its assets, or liquidity. The Basel Accords (I to II, III in 2022?) are examples of the first type, but without any theory on the optimal capital structure or mentioning of a specific market failure. Instead, the reasoning is that capital regulation is necessary due to the banks' incentive to make excessively risky investments, thanks to the moral hazard problem created by deposit insurance. The policy of deposit insurance thus justifies the capital adequacy policy. The position would relate the generous Norwegian Deposit insurance scheme to capital adequacy ratios higher than those given by the single rulebook.

[xiii] See e.g. Armour et al (2016) for a description of financial regulation and the different components.

[xiv] Building on the financial friction literature and equilibrium effects, the reasoning shows how shocks may be amplified (see Kiyotaki and Moore (1997) or Bernanke et al (1999)) but not how regulation should be structured.

[xv] The countercyclical capital buffer in Norway is related to the four key indicators for identifying the build-up of imbalances, credit-to-GDP, house-prices-to-income, the commercial property price gap and the wholesale funding ratio gap (see Norges Bank (2013) for a description).

[xvi] The Norwegian government has been discussing the Norwegian deposit insurance with the EU Commission. For details on the deposit insurance scheme see https://www.bankenessikringsfond.no/news/changes-to-the-norwegian-guarantee-deposit-scheme-article714-989.html

[xvii] See Acharya (2003) for harmonization of capital.

[xviii] Andersen (2013) analysing risk weights on residential mortgages in Norway show how IRB banks reduced risk weights by up to 80 percent since the new capital standards were introduced in 2007. By the end of 2012, the average risk weigh by IRB banks was 11 percent, less than one third of the minimum requirements of smaller banks using the standardised approach. Based on data back to the Norwegian banking crisis, using default and loss data, Andersen argues for risk weights in the range between 20 to 30 percent.

[xix] See Scanlon et al (2011) for a non-technical description of mortgage market innovations in general, and Borgersen and Greibrokk (2012) for reflections on the Norwegian mortgage market.

[xx] Biachi (2011) argue regulation from an efficiency point of view, and especially for why regulators should intervene in a lending boom lifting house prices towards a housing bubble.

[xxi] See for instance the Nordic Work Group on Basel III/CRD IV: https://www.regjeringen.no/contentassets/5865ecd1e14449d8d607230fg2gffff/report_nordicworkinggroup-drdiv.pdf